

# Race and self assessed health status: the role of socioeconomic factors in the USA

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## Abstract

**Study objective** – To estimate relative odds ratios and to ascertain the relative contribution of each socioeconomic covariate in explaining racial disparities in self assessed health status (for example, global health perceptions and functional limitations of daily activities).

**Design** – National representative data from the 1987–88 national survey of families and households, a multistage, stratified probability sample of non-institutionalised American adults age 19 and older, were used. Logistic regression models enabled a multistage building strategy to be used in the analyses.

**Participants and setting** – The study included three racial groups: whites (n = 9419), blacks (n = 2391), and Hispanics (n = 1004). While face to face interviews were carried out with each respondent, some portions of the interview were self administered to collect sensitive information.

**Main results** – Compared with whites, blacks and Hispanics were more likely to assess health as poor and report having functional limitations of daily activities. Socioeconomic factors tended to play a different role in explaining racial disparities in self assessed health status. In global health, education tended to play a significant role in accounting for health disparities between whites and Hispanics. In functional limitations, none of the covariates explained racial differences for blacks, whereas for Hispanics, education and marital status explained racial differences.

**Conclusions** – The debate over whether race is a proxy for socioeconomic conditions or race influences health independent of socioeconomic factors depends on the measure of health and racial group included in the study. Future studies should examine separately the differential impacts of various socioeconomic factors on varying domains of health.

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Despite consistent evidence describing disparities in self assessed health status among racial groups, little consensus has been reached on how to explain these disparities.<sup>1–3</sup> One perspective considers race as a proxy for social

class (as measured by income or education) and views the relationship between race and health as “spurious.” Based on the finding that the influences of race on health tend to disappear after adjusting for income or education, the proponents of this perspective suggest that the gap in health outcomes among racial groups would simply close significantly after reducing class inequality.<sup>4</sup> An alternative perspective considers race as representing more than social class. The fact that the relationship between race and health is pervasive even after adjusting for socioeconomic status has led to the conclusion that racial disparities are robust indicators of a wide range of social conditions including not only socioeconomic status, but also living arrangements and racism.<sup>5–7</sup>

However, in assessing the importance of race in explaining racial disparities in health, most studies tend to control for, instead of analysing, socioeconomic status. In these analyses, the dynamics of the effects of socioeconomic status in explaining racial disparities in health have often been overlooked. A few studies have examined the interaction between race and socioeconomic status on health using a stratification approach, that is, dividing the sample into racial groups to estimate the effects of socioeconomic status separately for whites, blacks, and Hispanics.<sup>8–9</sup> These studies are necessary, but they are insufficient to identify critical features of socioeconomic status or to disentangle the separate effects of socioeconomic status on health across racial groups. Extending our earlier exploration of the subject,<sup>3</sup> we adopted a different statistical approach (that is, a multistage model building strategy) in this study to further explore the role of various socioeconomic conditions in accounting for racial disparities in self assessed health status (as measured by general health perceptions and functional limitations of daily activities).

## Methods

Data for this study were obtained from the 1987–88 national survey of families and households (NSFH). The NSFH, a national representative survey, was a multistage, stratified probability sample of non-institutionalised American adults age 19 and older.<sup>10</sup> The survey randomly selected one adult from each household to be the primary respondent. The NSFH adopted a face to face interview procedure, but some portions of the interview in which sensitive information was required were self administered.

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Sociodemographic characteristics of the study sample

	Race/ethnicity (weighted %)		
	White (n = 9419)	Black (n = 2391)	Hispanic (n = 1004)
Total	81.4	11.3	7.3
Age (y):			
≤ 29	25.0	32.2	37.9
30-39	22.1	23.7	26.2
40-49	16.1	14.9	13.9
50-59	12.7	13.1	11.4
≤ 60	24.2	16.1	10.5
Sex:			
Male	47.7	44.5	49.7
Female	52.3	55.5	50.3
Language:			
English	—	—	74.8
Spanish	—	—	25.2
Marital status:			
Married	64.7	40.2	54.7
Were married	17.0	26.6	18.3
Never married	18.2	33.2	27.0
Education (y):			
≤ 11	18.2	33.1	47.0
12	39.1	36.4	31.2
≥ 13	42.7	30.6	21.4
Income (\$):			
< 5000	45.3	48.4	45.0
5000-9999	8.6	11.7	15.0
10 000-19 999	18.0	20.7	26.6
20 000-29 999	12.3	11.5	8.4
≥ 30 000	15.8	7.7	5.0

The interview was conducted in either English or Spanish. The initial translation of all questionnaires into Spanish was pretested among Puerto Ricans in New York and also reviewed by people familiar with Mexican American usage. After revision, another pretest was conducted in a Puerto Rican area of New York and in a Mexican American area of Los Angeles. Bilingual interviewers were hired to work in areas where there was a significant concentration of Spanish speaking people. The interviewee was given the option of taking the interview in Spanish or English. A total of 259 interviews were conducted in Spanish (2% of the total sample). The average interview lasted 1 hour and 40 minutes. In the NSFH no attempt was made to obtain interviews with people who did not speak either Spanish or English. A total of 198 respondents were not interviewed because of their inability to be interviewed in English or Spanish.

The NSFH contained a main sample of 9643 respondents and an over sample of 3374 minorities and households containing single parent families, step families, and recently married and cohabiting couples. The overall response rate was 75.5% for the main sample and 76.8% for the over sample. Following the NSFH, sampling weights were used to adjust for the unequal representation of the over sampled populations.<sup>10</sup>

The NSFH gathered information on four racial groups: whites, blacks, Hispanics, and "others" from the survey question, "Which of the groups on this card best describe you?" Due to small sample size, we excluded 168 respondents who reported "others" and 35 respondents who were missing on this self identified race category. Hence, the study included a total of 12 814 respondents: 9419 whites (81%), 2391 blacks (11%), and 1004 Hispanics (7%) (see table 1). Among the Hispanic re-

spondents, 630 (60%) were Mexican, 191 (16%) Puerto Rican, 44 (6%) Cuban, and 139 (18%) other Hispanics.

Two self assessed health measures were analysed in the study: (1) global health assessment and (2) functional limitations of daily activities. Global health assessment was measured by asking, "Compared with other people your age, how would you describe your health?" Functional limitations was measured by asking, "Do you have health conditions that limit your ability to care for personal needs such as dressing, eating, or going to the bathroom; move about inside the house; work for pay; do day to day household tasks; climb a flight of stairs; walk six blocks?"

Although a number of studies have found that global health perception is a powerful predictor of morbidity and mortality, recent evidence has raised concerns about the utility of using global health assessment measures for racial comparisons.<sup>11</sup> This new qualitative research indicates that different racial groups have different interpretations of question meaning and response categories.<sup>12</sup> We used global health perception along with a measure of functional limitations of daily activities, a more objective measure of health status, comparing findings with both measures.

As would be expected in the general adult population, the distributions of the two measures of health in the study are quite skewed toward the healthy end of the scale. Because of the small numbers of persons in the less healthy categories, a dichotomous measure was created for each of the two health domains.<sup>13</sup> The original five response categories of global health perception were collapsed to two representing "good health" (including responses of "very good" and "good") and "not good health" (including responses of "fair", "poor", and "very poor"), whereas functional limitations of daily activities were recoded to represent "yes" or "no" answers of having functional limitations. The use of dichotomous measures was supported by our preliminary analyses,<sup>3</sup> in which we used SAS logistic regression for an ordinal response (or polytomous logistic regression) to analyse global health assessment and functional limitations of daily activities.<sup>14</sup> In these preliminary analyses, we tested the assumption of proportionality for the ordinal responses. The  $\chi^2$  tests were all significant, indicating that logistic regression models for an ordinal response were not appropriate for the data.

The study also included three socioeconomic covariates that have been previously hypothesised to influence health: marital status (married, separated/divorced/widowed, and never married), years of schooling ( $\leq 11$ , 12, and  $\geq 13$ ), and income (\$0-4999, \$5000-9999, \$10 000-19 999, \$20 000-29 999, and \$30 000 or more). Age and sex, often linked to health outcomes, were also included in the study as two controlling variables.

Descriptive characteristics of the study population are contained in table 1. Compared with whites, blacks and Hispanics were younger, less educated, less likely to be married, and had

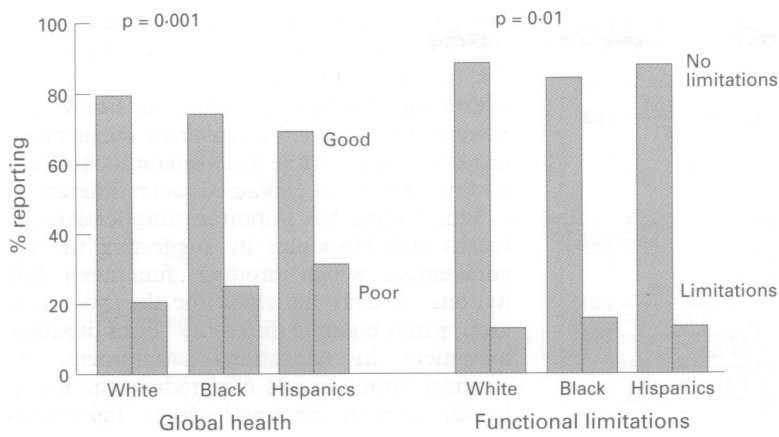


Figure 1 Self assessed health status for whites, blacks, and Hispanics.

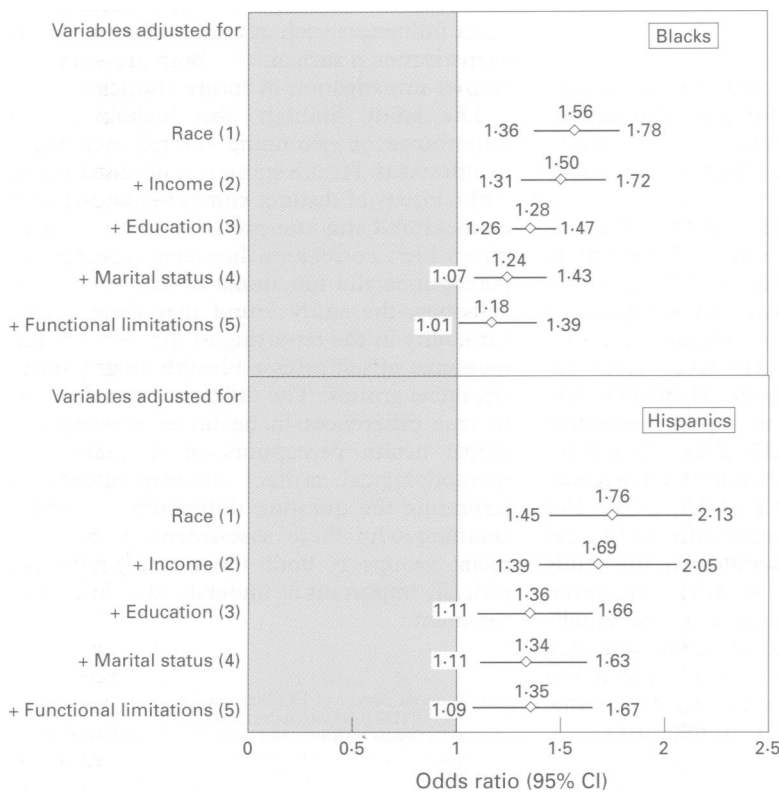


Figure 2 Odds ratios of reporting poor global health for blacks and Hispanics relative to whites.

focused on the explanation of the racial differences in health after introducing the socioeconomic covariates into the analyses. Therefore, in presenting the statistical results, we opted to use a visual technique (presenting the odds ratios for race only) instead of a conventional table format so as to describe patterns of influences of race on health outcomes in the context of the socioeconomic characteristics.

**Results**

Figure 1 reports the distribution of global health assessment and functional limitations of daily activities for whites, blacks, and Hispanics. Overall, whites were significantly less likely to report poor global health than blacks and Hispanics. Among the total respondents, 1903 of the white respondents (20%) reported poor global health, while 617 of the black respondents (26%) and 312 of the Hispanic respondents (31%) reported poor global health ( $p=0.001$ ). On the other hand, compared with whites (1149, 12%), 373 of the black respondents (16%) and 123 of the Hispanic respondents (12%) reported having functional limitations of daily activities ( $p=0.01$ ).

Among the Hispanic subgroup, 43% of the respondents who used Spanish reported poor global health compared with 26% of those who used English in the survey ( $p=0.001$ ). (Data available upon request.) However, there is no difference in reports of having functional limitations of daily activities between those who used English and those who used Spanish in the survey (12%). Based on this observation, we decided not to stratify the Hispanic population in relation to language, but instead adjusted for it in the logistic regression models.

Figure 2 reports the relative odds ratios (OR) and 95% confidence intervals (CI) for racial groups in global health assessment. The top panel shows the results for blacks, whereas the bottom panel presents the results for Hispanics relative to whites. After adjusting for age, sex, and language, blacks were 1.56 times more likely to report poor global health (95% CI 1.36, 1.78); whereas Hispanics were 1.76 times more likely to report poor global health (95% CI= 1.45, 2.13). After adding income into the model, the ORs for blacks (1.50, 95% CI= 1.3, 1.72) and Hispanics (1.69, 95% CI= 1.39, 2.05) decreased slightly, but remained significant.

Overall, after controlling for other covariates, race remained a significant predictor of differential assessment of global health, and Hispanics tended to have the highest risk of reporting poor global health. Figure 2 also shows, however, that the effects of race on self assessed health status was modified by education differently for blacks and Hispanics. For blacks, the racial effect was gradually reduced, while for Hispanics, there was a sharp reduction in the racial effect on self assessed health status after adjusting for education. Moreover, for Hispanics, the magnitude of the racial effect also increased after the adjustment of functional limitations of daily activities.

lower income. Among the two minority groups, Hispanics were younger, less educated, had lower income, but were more likely to be married than blacks.

SAS logistic regression was used to analyse the models for global health perception and functional limitations of daily activities.<sup>14</sup> The analyses adopted a multistage model building strategy to examine the relative influence of a series of socioeconomic conditions on racial disparities in the self assessed health measures.<sup>15</sup> The analyses first regressed race on “not good health” or “having functional limitations” adjusted for age, sex, and language. Then, income, education, and marital status were added one at a time to the model. In the global health perception model, the presence of functional limitations of daily activities was also used as a covariate. In this study, we

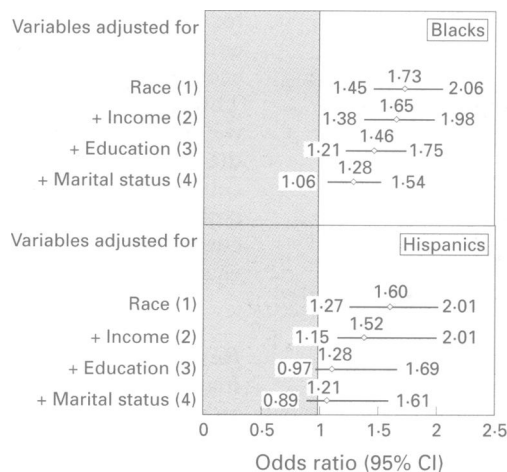


Figure 3 Odds ratios of reporting functional limitations for blacks and Hispanics.

Figure 3 reports the results for the model analysing the presence of functional limitations of daily activities. In general, for both blacks and Hispanics, the racial effect was gradually reduced after adjusting for each of the covariate. For instance, after adjusting for age, sex, and language, blacks were 1.73 times more likely to report functional limitations (95% CI=1.45, 2.06). When income was introduced into the model, the odds ratio reduced to 1.65 (95% CI=1.38, 1.98). Similarly, after adjusting age, sex, and language, Hispanics were 1.60 times more likely to report functional limitations (95% CI=1.27, 2.01). When income was added, the odds ratio for Hispanics dropped to 1.52 (95% CI=1.15, 2.01). For blacks, race remained a significant factor after adjusting for all the covariates in the study (OR=1.28, 95% CI=1.06, 1.54). However, for Hispanics, race became only marginally significant after further adjusting for education (OR=1.28, 95% CI=0.97, 1.69) and it lost significance after further adjusting for marital status (OR=1.21, 95% CI=0.89, 1.61).

## Discussion

The current study provided mixed results on the perspectives in explaining racial disparities in health. On the one hand, there were indications in the study that the effect of race on self assessed health status could be accounted for by socioeconomic conditions. On the other hand, the study also provided support for the notion that race had a robust impact on self assessed health independent of socioeconomic factors. It seems that the debate over whether race is a proxy for socioeconomic conditions or race influences health independent of socioeconomic conditions depends largely on the measure of health as well as racial group included in the analyses.

Previous studies, by simply comparing the adjusted to the unadjusted results, were unable to disentangle the relative contribution of the socioeconomic covariates in explaining racial differences in health. The current study revealed that socioeconomic factors tended to play a different role in explaining racial dis-

parities in self assessed health status. In global health, education tended to play a significant role in explaining health disparities between whites and Hispanics. In functional limitations, none of the covariates explained racial differences for blacks, while for Hispanics, education and marital status explained racial differences.

This finding has important implications for blacks and Hispanics by suggesting the circumstances which produce functional limitations of daily activities for the two racial groups may be quite different.<sup>13</sup> For Hispanics, increment in educational attainment and stronger family bonds may reduce the gap in health between them and whites. For blacks, the fact that race remains a significant predictor even after the adjustment of sociodemographic covariates suggests that the health differential between them and whites was attributable to other influences such as cultural factors as well as institutional racism.<sup>6,16,17</sup> Both are worthy of further investigation in future studies.

The study findings also highlighted the importance of examining several domains of health status. Health status is multidimensional and consists of distinct components that must be measured and interpreted separately.<sup>18</sup> Despite a high correlation between global health perceptions and functional limitations of daily activities, the study found that there existed variability in the reporting of the two different measures of self assessed health among different racial groups. The difference could be due to true differences in health as measured by global health perception, or it could be a methodological artifact of respondents interpreting the question differently.<sup>11,12</sup> Understanding why these assessments vary across racial groups is both theoretically and empirically important to understanding health assessment.

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